

Remarks

Claims 1-16 are pending in the application; claims 8-12 are allowed, and claims 1-7 and 13-16 are rejected. Based on the following, reconsideration of the rejected claims is requested.

Claim Rejections—35 U.S.C. § 103

The Examiner rejected claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,806,617 (Yamaguchi) in view of U.S. Patent No. 4,335,429 (Kawakatsu). The MPEP states that in order to establish *prima facie* obviousness, all of the claim limitations of an invention must be taught or suggested by the prior art. MPEP § 2143.03, 8th ed., Rev. 2. Because each of the rejected claims contains limitations which are neither taught nor suggested by the cited references, it is submitted that each of the claims is allowable.

Claim 1 of the present application recites a method for operating a vehicle that includes the use of first and second torque thresholds to determine the operating characteristics of torque producing devices within the vehicle. In particular, claim 1 recites "comparing [a] demanded torque to a first torque threshold," and "partitioning the demanded torque into an engine torque and a motor torque based on the comparison of the demanded torque to the first torque threshold...." Claim 1 further recites "comparing the demanded torque to a second torque threshold when the engine torque is non-zero; and determining a number of operating cylinders for the engine when the engine torque is non-zero, the number of operating cylinders being based on the comparison of the demanded torque to the second torque threshold." The Examiner states that "Yamaguchi fails to specifically teach the comparison of the demanded torque to first and second thresholds...." The Examiner further states that "Kawakatsu teaches a motor/engine torque apportionment scheme wherein only motor drive is used when a torque value below a first torque-speed threshold, and wherein the drive is divided up amongst an engine and motor when that threshold is exceeded." Missing from each of these references is the teaching or suggestion of using two torque thresholds: a first to partition demanded torque

into an engine torque and motor torque, and a second torque threshold to determine a number of operating cylinders for an engine, when the engine torque is non-zero. The use of the two torque thresholds is specifically recited in claim 1 of the present application.

Yamaguchi teaches a hybrid vehicle that may be controlled by increasing a motor torque in response to an accelerator pedal position, such that an engine can be operated with a lean air-to-fuel (A/F) ratio. (Col. 7, ll. 60-67; Figure 4.) Even if the operation of the motor in response to the change in accelerator pedal position is interpreted as a partitioning of demanded torque into an engine torque and a motor torque based on a torque threshold, there is still no teaching or suggestion to then operate a number of cylinders for an engine based on a second torque threshold, as specifically recited in claim 1 of the present application. Even when Yamaguchi is combined with Kawakatsu, there is still no teaching or suggestion for all of the limitations of claim 1 of the present application. Therefore, it is submitted that with regard to claim 1, the requirements for *prima facie* obviousness are not met.

Claims 2-7 depend from claim 1. Each of these dependent claims contains all of the limitations of claim 1, as well as additional limitations which further distinguish it from the cited references. For example, claim 6 recites that "the first torque threshold is a function of vehicle speed or engine speed." No such limitation is taught or suggested in the cited references. As noted above, Yamaguchi does not explicitly teach the use of any torque threshold, and therefore a variable torque threshold that is a function of vehicle speed or engine speed is not taught, or even suggested. Claim 7 also contains limitations which are neither taught nor suggested by the cited references. For example, claim 7 recites "allocating a majority of torque values to the motor when the demanded torque changes rapidly, thereby maintaining a substantially constant engine torque allocation." Such limitations provide the advantage of a smooth operation of the vehicle, thereby ensuring that rapid torque changes are not manifest in rapid changes to the engine operation, but rather, are handled by the motor. Therefore, claims 2-7 each contain limitations which are neither taught nor suggested by the cited references, and it is submitted that with regard to these claims, the requirements for *prima facie* obviousness are not met.

The Examiner rejected claims 13-16 under 35 U.S.C. § 103(a) as being unpatentable over Yamaguchi in view of U.S. Patent No. 6,483,833 (Chhaya et al.). As noted by the Examiner, Chhaya et al. describes the use of a plurality of state of charge values which are associated with different torque distributions. Even so, Chhaya et al., alone or in combination with the other cited references, does not teach or suggest all of the claim limitations of claim 13 of the present application. For example, claim 13 recites "comparing an amount of charge in the electrical storage device to a predetermined value, the predetermined value being based on the demanded torque...." Thus, the predetermined value used in the method of claim 13, is a variable, the value of which is based on the demanded torque. The plurality of charge states illustrated in Figure 3 in Chhaya et al. are actual states of charge of a battery, and do not represent a variable predetermined value as specifically recited in claim 13 of the present application.

Claim 13 is the base claim for claims 14-16. Each of these dependent claims contains all of the limitations of claim 13, as well as additional limitations which further distinguish it from the cited references. For example, claim 16 recites "allocating a majority of torque values to the motor when the demanded torque changes rapidly, thereby maintaining a substantially constant engine torque allocation." As discussed above, this method provides the advantage of a smooth operation because rapid torque changes are not manifest in changes to the engine operation. No such limitations are taught or suggested by Chhaya et al., alone, or in combination with any of the cited references. Therefore, with regard to claims 13-16, it is submitted that the requirements for *prima facie* obviousness are not met.

Based on the foregoing, allowance of claims 1-7 and 13-16 is respectfully requested.

Allowable Subject Matter

Applicants gratefully acknowledge the allowance of claims 8-12.

Respectfully submitted,

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